

Remarks/Arguments:

Claims 1-7 are pending in the above-identified application. By the present Amendment, claims 1 and are amended.

Objections to the Drawings

Fig. 5 is objected to for allegedly failing to include a "Prior-Art" legend. Applicant respectfully directs the Examiner's attention to the Preliminary Amendment received by the Office on October 11, 2005. In the Preliminary Amendment, Applicant amended Fig. 5 to include a "Prior-Art" legend. Accordingly, Applicant respectfully asserts that the objection to Fig. 5 is moot and respectfully requests that the objection be withdrawn. Favorable consideration is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 1-7 are rejected under 35 U.S.C. §103(a) as being obvious over Japanese Patent Publication No. S62-44108 of Nobuo et al. ("Nobuo") in view of U.S. Patent No. 6,457,561 to Goodnight. To expedite prosecution, Applicant amends claim 1 by the present Amendment. For the reasons set forth below, Applicant respectfully contends that neither Nobuo nor Goodnight nor their combination discloses or suggest all of the features of claims 1-7.

Claim 1, as amended, recites a feature which is neither disclosed nor suggested by Nobuo or Goodnight alone or in combination, namely:

a shaft having a main shaft and a sub-shaft, the main shaft comprising a first section having a first diameter and **a second section having a second diameter smaller than the first diameter;**

. . .

a reverse leading groove having a lead directing in an opposite direction to that of the forward leading groove, and having **a first end within the second section of the shaft . . .**

(Emphasis added.)

These features are found throughout the originally filed application and particularly, for example, on page 4, lines 18-20 and in Fig. 2.

The above-identified application describes a compressing mechanism 111 having a shaft 127 that comprises a forwarding leading groove 137 and a reverse leading groove 139. (See Application, page 4, lines 3-5 and 10-13.) The bottom end of forwarding leading groove 137 communicates with a centrifugal pump 133. (See Application, page 4, lines 16-18.) The top end of forward leading groove 137 opens directly to an annular lubricant groove 141. (See Application, page 4, lines 16-18.) The bottom end of reverse leading groove 139 opens directly to a thinner section 135 of shaft 127. (See Application, page 4, lines 18-19.) The top end of reverse leading groove 139 also opens directly to annular lubricant groove 141. (See Application, page 4, lines 19-20.) During operation, lubricant is pushed to the outer rim of annular lubricant groove 141 by centrifugal forces, thereby reducing the amount of oil flowing into reverse leading groove 139. (See Application, page 5, line 12 - page 6, line 2.)

With respect to claim 1, the Office Action admits that Nobuo does not disclose the "reverse leading groove" and associated limitations thereof recited in the claim. The Office Action cites to Goodnight for disclosing these features. (See Office Action, page 5, top.) Applicant respectfully asserts that Goodnight does not disclose all of the limitations relating to the "reverse leading groove" of claim 1, as amended.

Goodnight discloses a compressor 56 that includes a shaft 32 that has "specially configured grooves." (See Goodnight, Col. 5, lines 25-29.) Fig. 6 of Goodnight illustrates examples of a first helical groove 42 and a second helical groove 44 that traverse the shaft 32. (See Goodnight, Col. 6, lines 6-7.) The helical grooves 42 and 44 "originate in the same groove origin 28 and symmetrically traverse the length of shaft 32 in opposing directions." (See Goodnight, Col. 6, lines 8-11.) The grooves 42 and 44 traverse the length of shaft 32 from groove origin 28 to the top of bearing 40. (See Goodnight, Col. 6, lines 15-16.) In other words, the helical grooves 42 and 44 traverse a length of the shaft 32 that is in communication with a bearing 40 to provide lubrication to the bearing 40. (See Goodnight, Col. 6, lines 29-31.) Goodnight contemplates that the helical grooves 42 and 44 can have two different groove origins 28, but it does not describe the placement of such groove origins 28. (See Goodnight, Col. 6, lines 13-14.)

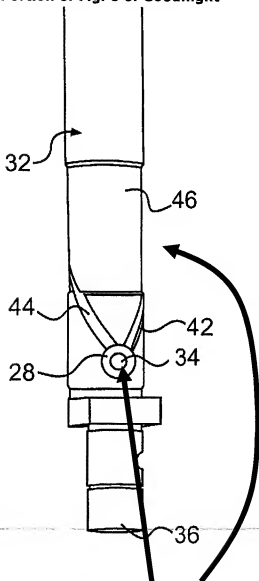
The above-quoted portion of claim 1 recites features relating to "a shaft" and "a reverse leading groove." Particularly, it recites that the shaft has "a main shaft and a sub-shaft, the main shaft comprising a first section having a first diameter and a second section having a second diameter smaller than the first diameter" and that the reverse leading groove has "a

first end within the second section of the shaft.” Goodnight does not disclose a reverse leading groove with such features.

As noted above, Goodnight discloses reverse and forward leading grooves that both begin in the same groove origin 28 or in separate groove origins 28. (See Goodnight, Col. 6, lines 8-11, 13-14.) As illustrated in Figs. 6-9 of Goodnight, groove origin 28 is located in a section of shaft 32 where it is widest. No groove origin 28 is illustrated or described as being within a section of shaft 32 that has a smaller diameter than this widest section. Specifically, there is no groove origin 28 in “a second section” of a shaft, where (1) the “shaft [has] a main shaft and a sub-shaft, the main shaft comprising a first section having a first diameter and [the] second section” and (2) the second section has “a second diameter **smaller** than the first diameter” (emphasis added), as recited in amended claim 1.

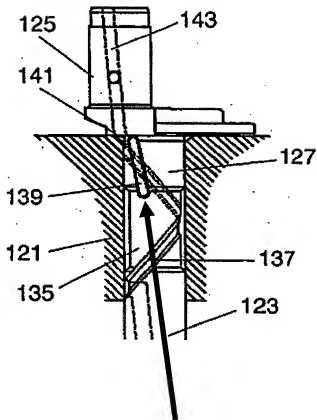
The difference between Goodnight’s shaft 32, as illustrated in Fig. 6 of Goodnight, and Applicant’s shaft recited in claim 1 and illustrated in Fig. 3 of Applicant’s application is illustrated below:

Portion of Fig. 6 of Goodnight



**No end of groove
 within section having
 smaller diameter**

Portion of Applicant's Fig. 3



**End of groove within
 section having
 smaller diameter**

Exhibit - Do Not Enter

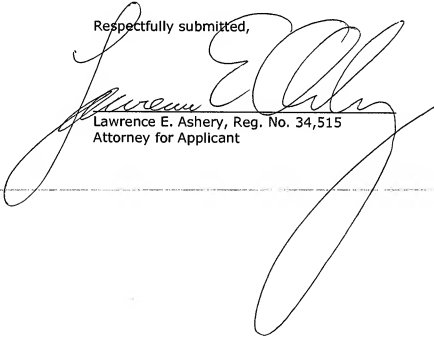
Accordingly, Applicant respectfully contends that Goodnight does not disclose or suggest "a reverse leading groove having a lead directing in an opposite direction to that of the forward leading groove, and having a first end within the second section of the shaft . . . , " as recited in amended claim 1. Withdrawal of the rejection and favorable reconsideration and allowance of the claim are respectfully requested.

Claims 2-7 depend from claim 1 and therefore include all of the features of claim 1. By the present Amendment, Applicant amends claim 2 to fix a typographical error. For at least the same reasons as discussed above, Applicant respectfully asserts that neither Nobuo nor Goodnight nor their combination discloses or suggests all of the features of claims 2-7. Withdraw of the rejections and favorable reconsideration and allowance of these claims are respectfully requested.

Conclusion

For the foregoing reasons, Applicant respectfully submits that the claims are in condition for allowance and request notification to that affect.

Respectfully submitted,



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